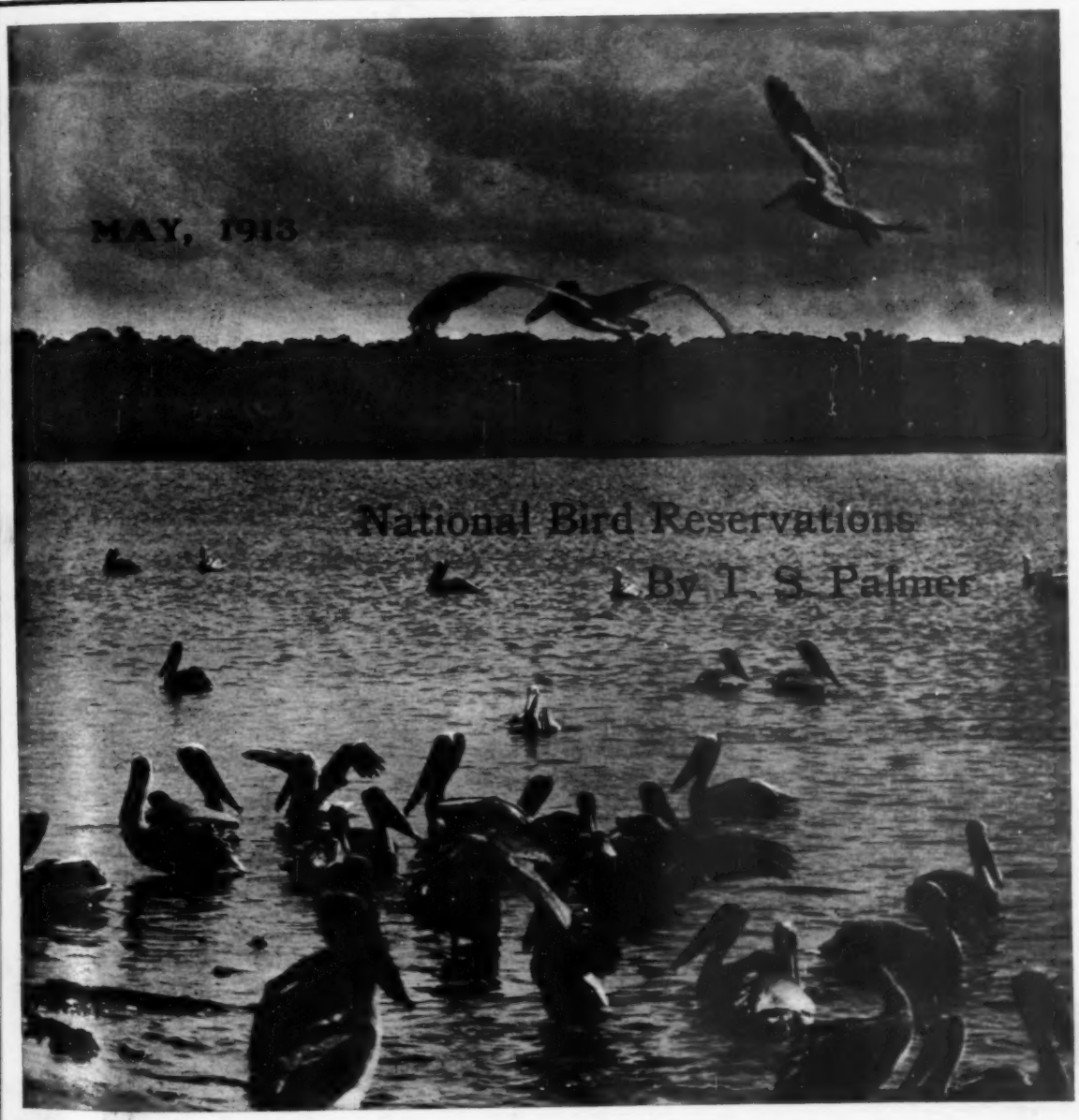
The American Museum Journal



MAY, 1913

National Bird Reservations

By T. S. Palmer

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The American Museum Journal

VOL. XIII MAY, 1913 No. 5

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MARY CYNTHIA DICKERSON, *Editor*

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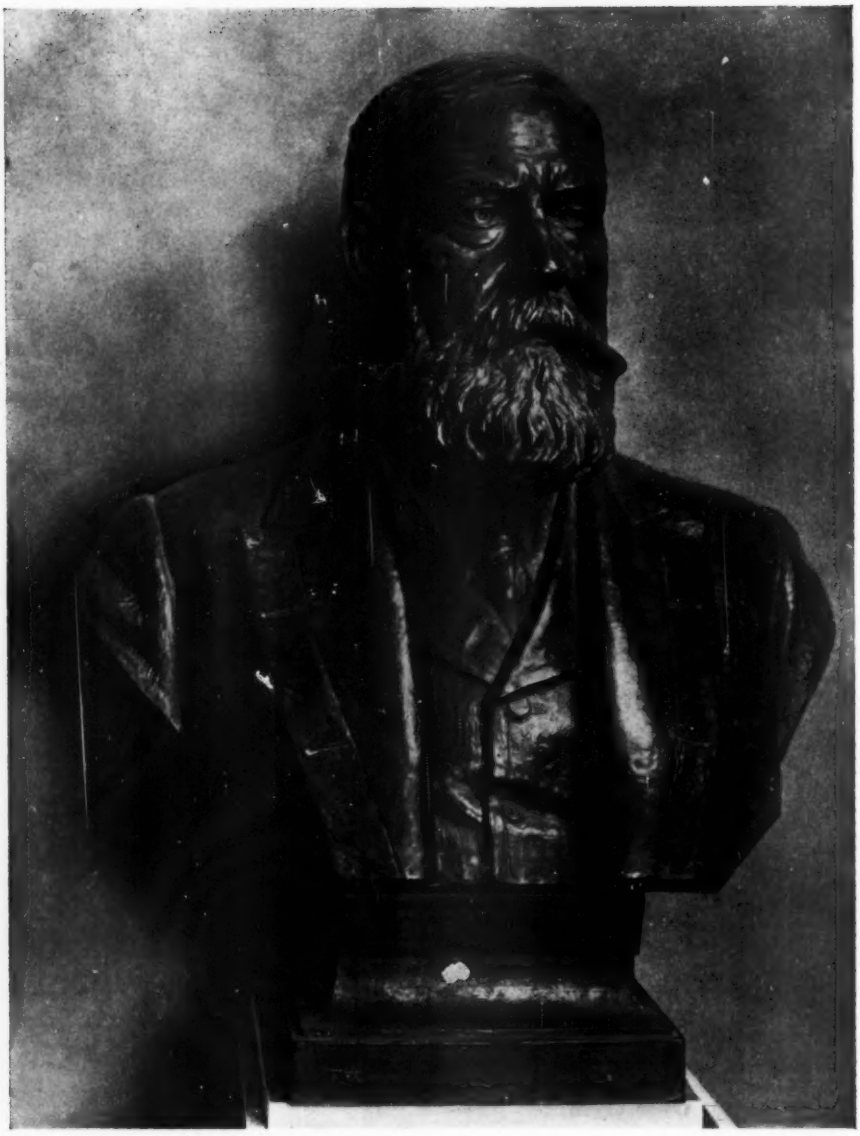


PROFESSOR ALBERT S. BICKMORE
CURATOR EMERITUS OF THE DEPARTMENT OF PUBLIC EDUCATION

Bronze by William Couper made in 1909 from portrait studies of Professor Bickmore and recently moved from the members' room to the east wall at the entrance to the auditorium
[See page 238]

The American Museum Journal

VOLUME XIII MAY, 1913 NUMBER 5

OUR NATIONAL BIRD RESERVATIONS

PROTECTED NESTING PLACES, RESTING AND FEEDING GROUNDS FOR BIRDS ON LONG MIGRATIONS—FIELD LABORATORIES FOR EXPERIMENTAL WORK ON IMPORTANT ECONOMIC AND SCIENTIFIC PROBLEMS

By T. S. Palmer

Assistant Chief, United States Biological Survey

WHEN President Roosevelt signed the Executive Order setting aside Pelican Island in Florida as a reservation, he took a step which was destined to mark an important milestone in the progress of bird protection. The colony of brown pelicans nesting on this island had been known to ornithologists for more than a century, and ever since the visit of Dr. Henry Bryant in 1858 it had been visited from time to time by observers who had published notes on the condition of birds. The visits of Mr. Frank M. Chapman in 1898 and 1900 and the wonderful series of photographs which he obtained showed very clearly the urgent necessity for the protection of the birds.

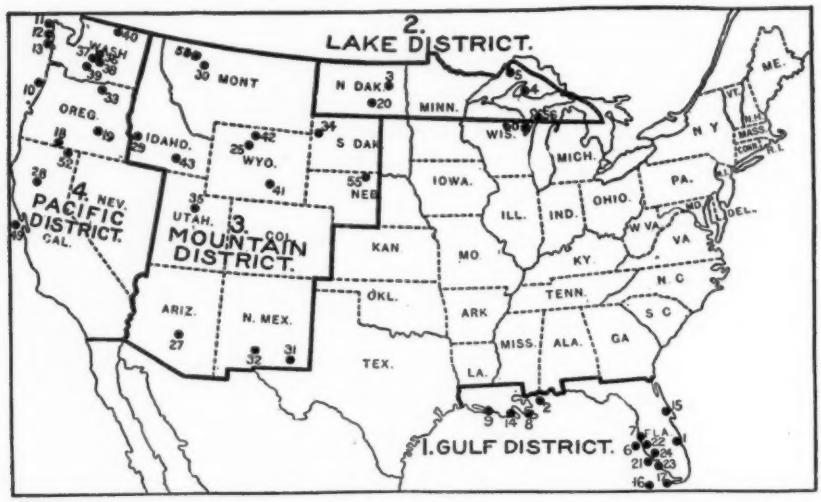
Late in April, 1901, at the request of Mr. William Dutcher, then chairman of the Committee on Protection of Birds of the American Ornithologists' Union, I accompanied him to Tallahassee, Florida, in an effort to secure the enactment of a law for the protection of these and other non-game birds. The effort met with success and under the act approved May 29, 1901, protection was extended to practically all non-game birds in the state. In the following year a warden was appointed by the committee and placed in charge of Pelican Island. Later the island was surveyed and negotiations were begun for its purchase, when it was suggested by the Surveyor General of the United States that it might be made a national reservation. Acting on this suggestion an Executive Order was prepared in the General Land Office, approved by the Secretary of the Interior, and submitted to the President. This Executive Order, the first ever issued for the benefit of birds, read as follows:

WHITE HOUSE, *March* 14, 1903

It is hereby ordered that Pelican Island in Indian River in section nine, township thirty-one south, range thirty-nine east, State of Florida, be, and it is hereby, reserved and set apart for the use of the Department of Agriculture as a preserve and breeding ground for native birds.

[Signed] THEODORE ROOSEVELT

Such briefly was the history of the creation of the first national bird reservation in the United States. In the ten years which have since elapsed many other islands and pieces of public land have been dedicated to the



Location of national bird reservations and administration districts. From Circular 87, Biological Survey, United States Department of Agriculture

birds until the number of reservations has increased from one to sixty-one, but Pelican Island still remains the best known and one of the most accessible.

Location of the Reservations

National bird reservations are widely scattered in nineteen states and territories, from Florida and Porto Rico in the south to Michigan, Montana, Washington and Alaska in the north and the Aleutian Islands and Hawaii in the west. Between Chamisso Island in Alaska and Culebra Island, Porto Rico, is a distance of nearly 50 degrees of latitude, and between Attu, the most distant of the Aleutian Islands and Culebra is a distance of more than 120 degrees of longitude. In other words, the most remote reservations are separated by a space equal to one-third the distance around the world from north to south and from west to east, and in visiting them a traveler must journey farther than in going from New York to Mombasa, British East Africa, or from London eastward to Manila.

In the following lists the reservations are arranged both chronologically and alphabetically to facilitate reference:

LIST OF NATIONAL BIRD RESERVATIONS MARCH 4, 1913, ARRANGED IN CHRONOLOGICAL ORDER

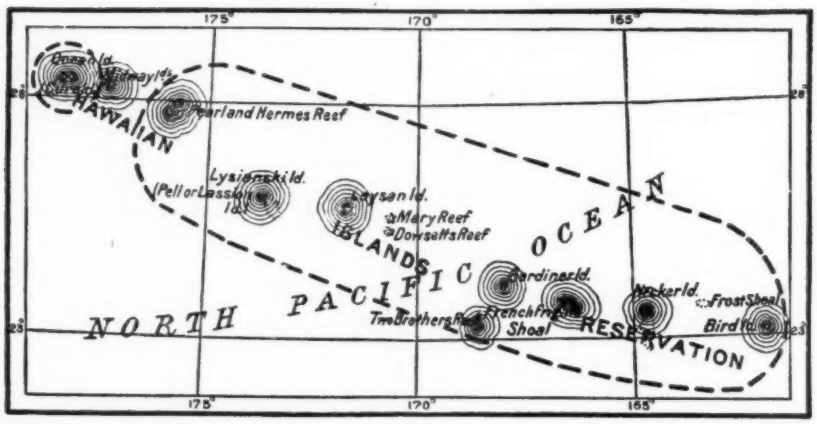
[Areas unknown, except as follows: Pelican Island 5.50, Stump Lake 27.39, Passage Key 36.37, and Indian Key 90 acres.]

No.	Name	Date established	Executive order No.
1	Pelican Island, Fla.	Mar. 14, 1903; Jan. 26, 1909	1014
2	Breton Island, La.	Oct. 4, 1904	.....
3	Stump Lake, N. Dak.	Mar. 9 1905	.....
4	Huron Islands, Mich.	Oct. 10, 1905	.....
5	Siskiwit Islands, Mich.	do	.....
6	Passage Key, Fla.	do	.....
7	Indian Key, Fla.	Feb. 10, 1906	.....
8	Tern Islands, La.	Aug. 8, 1907	.....
9	Shell Keys, La.	Aug. 17, 1907	.....
10	Three Arch Rocks, Oreg.	Oct. 14, 1907	699
11	Flattery Rocks, Wash.	Oct. 23, 1907	703
12	Quillayute Needles, Wash.	do	705
13	Copalis Rock, Wash.	do	704
14	East Timbalier, La.	Dec. 7, 1907	718
15	Mosquito Inlet, Fla.	Feb. 24, 1908; Apr. 2, 1909	763; 1057
16	Tortugas Keys, Fla.	Apr. 6, 1908	779
17	Key West, Fla.	Aug. 8, 1908	923
18	Klamath Lake, Oreg.	do	924
19	Lake Malheur, Oreg.	Aug. 18, 1908	929
20	Chase Lake, N. Dak.	Aug. 28, 1908	932
21	Pine Island, Fla.	Sept. 15, 1908	939
22	Palma Sola, Fla.	Sept. 26, 1908	942
23	Matlacha Pass, Fla.	do	943
24	Island Bay, Fla.	Oct. 23, 1908	958
25	Loch-Katrine, Wyo.	Oct. 26, 1908	961
26	Hawaiian Islands, Hawaii	Feb. 3, 1909	1019
27	Salt River, Ariz.	Feb. 25, 1909	1032
28	East Park, Cal.	Feb. 25, 1909	1032
29	Deer Flat, Idaho	do	1032
30	Willow Creek, Mont.	do	1032
31	Carlsbad, N. Mex.	do	1032
32	Rio Grande, N. Mex.	do	1032
33	Cold Springs, Oreg.	do	1032
34	Belle Fourche, S. Dak.	do	1032
35	Strawberry Valley, Utah	do	1032
36	Keechelus, Wash.	do	1032
37	Kachess, Wash.	do	1032
38	Clealum, Wash.	do	1032
39	Bumping Lake, Wash.	do	1032
40	Conconully, Wash.	do	1032
41	Pathfinder, Wyo.	do	1032
42	Shoshone, Wyo.	do	1032
43	Minidoka, Idaho	do; Feb. 21, 1912	1032; 1486
44	Bering Sea, Alaska	Feb. 27, 1909	1037
45	Tuxedni, Alaska	do	1039
46	St. Lazaria, Alaska	do	1040
47	Yukon Delta, Alaska	do	1041
48	Culebra, P. R.	do	1042
49	Farallon, Cal.	do	1043
50	Pribilof, Alaska[1]	do	1044
51	Bogoslof, Alaska	Mar. 2, 1909	1049
52	Clear Lake, Cal.	Apr. 11, 1911; Jan. 13, 1912	1332; 1464
53	Forrester Island, Alaska	Jan. 11, 1912	1458
54	Hazy Islands, Alaska	do	1459
55	Niobrara, Nebr.	do	1461
56	Green Bay, Wis.	Feb. 21, 1912	1487
57	Chamisso Island, Alaska	Dec. 7, 1912	1658
58	Pishkun, Mont.	Dec. 17, 1912	1664
59	Desecheo Island, P. R.	Dec. 19, 1912	1669
60	Gravel Island, Wis.	Jan. 9, 1913	1678
61	Aleutian Islands, Alaska	Mar. 3, 1913	1733

LIST OF NATIONAL BIRD RESERVATIONS MARCH 4, 1913, ARRANGED ALPHABETICALLY

Aleutian Islands Alaska	61	Forrester Island, Alaska	53	Pelican Island, Fla.	1
Belle Fourche, S. Dak.	34	Gravel Island, Wis.	60	Pine Island, Fla.	21
Bering Sea, Alaska	44	Green Bay, Wis.	56	Pishkun, Mont.	58
Bogoslof, Alaska	51	Hawaiian Islands, Hawaii	26	Pribilof, Alaska	50
Breton Island, La.	2	Hazy Islands, Alaska	54	Quillayute Needles, Wash.	12
Bumping Lake, Wash.	39	Huron Islands, Mich.	4	Rio Grande, N. Mex.	32
Carlsbad, N. Mex.	31	Indian Key, Fla.	7	St. Lazaria, Alaska	46
Chamisso Island, Alaska	57	Island Bay, Fla.	24	Salt River, Ariz.	27
Chase Lake, N. Dak.	20	Kachess, Wash.	37	Shell Keys, La.	9
Clealum, Wash.	38	Keechelus, Wash.	36	Shoshone, Wyo.	42
Clear Lake, Cal.	52	Key West, Fla.	17	Siskiwit, Mich.	5
Cold Springs, Oreg.	33	Klamath Lake, Oreg.	18	Strawberry Valley, Utah	35
Conconully, Wash.	40	Loch-Katrine, Wyo.	25	Stump Lake, N. Dak.	3
Copalis Rock, Wash.	13	Malheur Lake, Oreg.	19	Tern Islands, La.	8
Culebra, P. R.	48	Matlacha Pass, Fla.	23	Three Arch Rocks, Oreg.	10
Deer Flat, Idaho	29	Minidoka, Idaho	43	Tortugas Keys, Fla.	16
Desecheo Island, P. R.	59	Mosquito Inlet, Fla.	15	Tuxedni, Alaska	45
East Park, Cal.	28	Niobrara, Nebr.	55	Willow Creek, Mont.	30
East Timbalier, La.	14	Palma Sola, Fla.	22	Yukon Delta, Alaska	47
Farallon, Cal.	49	Passage Key, Fla.	6		
Flattery Rocks, Wash.	11	Pathfinder, Wyo.	41		

[1] Transferred to Bureau of Fisheries by act of Apr. 21, 1910.



Hawaiian Islands Reservation for the protection of the birds of the territory of Hawaii. [Reefs and islets embraced within the broken lines.] From Circular 87, Biological Survey, United States Department of Agriculture

For purposes of administration these reservations are grouped in six districts, known as the (1) Gulf, (2) Lake, (3) Mountain, (4) Pacific, (5) Alaska and (6) Hawaiian districts. In time each district will be in charge of a supervisory officer or inspector and probably each of the more important reservations will have a warden to protect the birds, at least during the breeding season.

Types of Reservations

Bird refuges are set aside because of their attractiveness to the birds either as nesting places or as resting and feeding grounds during migration or winter. They are usually small, sandy, marshy or rocky islands, uninhabited, of little or no agricultural value, and attractive to the birds largely on account of their isolation. These islands are located chiefly along the sea coast or on some of the interior lakes.

The insular reservations are well represented in the bird groups in the American Museum. The brown pelican group is an exact reproduction of Pelican Island. The white pelican and western grebe groups illustrate the conditions on the Klamath Lake Reservation. The heron groups show the home life in some of the Florida reservations, and Bird Rock and Cobbs Island groups, while not national reservations, convey a very good idea of the life of some of the rocky islands on the west coast and the sand bars in the refuges in the Gulf district. In fact the expeditions of the Museum to collect material for these groups and the publications of Mr. Chapman on his trips and on the bird life here represented have done much to familiarize the public with the reservations and to popularize this method of wild life conservation.

ALEUTIAN ISLANDS RESERVATION, ALASKA

This reservation was established, March 3, 1913, for the protection of native birds, the propagation of reindeer and fur-bearing animals and the development of fisheries. [The reservation consists of the great series of islands represented within the broken lines]

WHITE PELICANS, KLAMATH LAKE

The white pelican has a wing expanse of eight or nine feet and is most impressive in the air. Photograph of portion of group in the American Museum, representing white pelicans, Caspian terns and cormorants. Klamath Lake, which is on the boundary of California and Oregon, was made a national reservation on August 8, 1908

Another type of reservation is the refuge established on the reclamation projects in the west. It comprises merely a narrow strip of land bordering the reservoir and is set aside to afford the birds a resting place on their journeys north and south. Some of these reservations were created before construction work was completed and before there was any water to attract the birds, in order to afford protection as soon as the reservoirs were filled and the birds began to visit them. One-third of all the reservations belong in this class.

While in most cases the refuges are isolated and some of them very difficult to visit, others, like Pelican Island and Mosquito Inlet, Florida, are readily accessible. The Deer Flat Reservation in Idaho seems destined to become something of a resort for the people of Boise and Nampa on account of the facilities for boating on the reservoir, and since the Niobrara Reservation, three miles from Valentine, Nebraska, has been stocked with a herd of big game, it attracts many visitors. On Forrester Island, Alaska, during the summer, is a camp of more than two hundred fishermen of various nationalities, and on the recently established Aleutian Reservation are two important settlements, Dutch Harbor and Unalaska, and several small villages of natives.

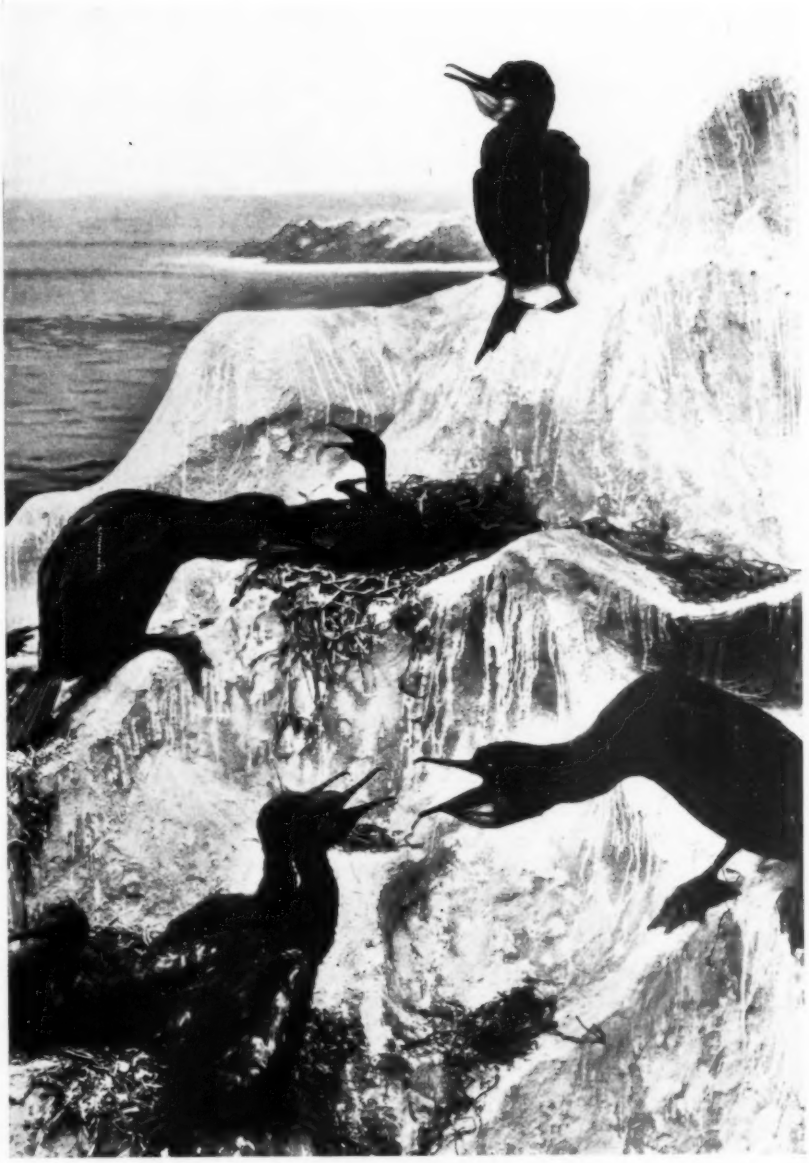
Kinds of Birds Protected

The birds which have been provided with homesteads by the National Government are chiefly marsh birds or waterfowl which nest in colonies. On the refuges in the Gulf District they comprise laughing gulls, terns of several kinds, brown pelicans, Florida cormorants, and several species of herons. On the reservations on the Great Lakes the herring gull is the principal species. On the interior lakes of Oregon are numbers of Canada geese, Caspian terns, California gulls, white pelicans and western grebes. These lakes formerly furnished many grebe skins for the millinery trade before they were protected by Executive Order. On the islands off the coast of California, Oregon and Washington, are found such birds as the western gull, the ashy, forked-tailed, and Kæding's petrels, the tufted puffin, Cassin's auklet, the remarkable rhinoceros auklet, pigeon and California guillemots, Baird's, Brandt's and Farallon cormorants. On the Alaska islands are colonies of Arctic sea birds, such as auklets, petrels, puffins and northern gulls. The Yukon Delta Reservation is one of the greatest breeding grounds for ducks and geese, including that of the rare Emperor goose. On the Hawaiian Island Reservation [1] in the Mid-Pacific is Laysan Island, one of the most famous bird colonies in the world where

[1] Many papers on the bird fauna of the reservations have been published and readers who may wish to consult them will find the titles and references in Circular 87 of the Biological Survey, entitled "Reservations for the Protection of Wild Life" (pp. 22–29).

Field study of Caspian terns at Klamath Lake. Photograph by Mr. Frank M. Chapman

Cormorant rocks off California coast near Monterey. Typical of bird life on various rocky islands along the Pacific coast such as Farallon Island which was made a national reservation in 1909. Photograph by Mr. Frank M. Chapman



BRANDT'S CORMORANT, CALIFORNIA COAST

Photograph of portion of habitat bird group in the American Museum, showing conditions such as are to be seen on Farallon Island. Other groups in the Museum giving studies of bird life such as may be seen on national reservations are as follows: brown pelican, white pelican, the western grebe, bird rock, Cobbs Island and the heron groups

Pelican Island, Florida. From the painting by Bruce Horsfal, background of the brown pelican group in the American Museum. Pelican Island, the first national bird reservation, was set aside in March, 1903, by order of President Roosevelt. It is guarded by a warden employed by the National Association of Audubon Societies. Only visitors who have secured a permit from this warden are allowed to land on the island

albatrosses, shearwaters, frigate birds, noddy and sooty terns, and the beautiful snow-white Pacific tern resort to breed. Here are also found resident throughout the year the peculiar Laysan rail, the Laysan teal, the Laysan finch, and the Miller bird.

How the Birds are Protected

In many cases the chief protection to the birds lies in the isolation of the reservation. The islands on the Washington coast and the Farallon Reservation are very difficult to land on even when the sea is smooth, and in rough weather are practically inaccessible. On the larger and more accessible reservations wardens are stationed throughout the year or at least during the season when the birds are breeding. In several cases, chiefly through the coöperation of the National Association of Audubon Societies, motor boats are provided for the use of the wardens in patrolling the waters about the islands. To protect the birds on Bird Key in the Dry Tortugas, recourse is had to the Navy Department which several times each year sends a Naval tug from Key West to the reservation to transport the warden and his supplies. In the case of the Hawaiian Reservation a revenue cutter is now despatched from Honolulu at least once each year and sometimes oftener, to make the round of the islands and ascertain whether the birds have been disturbed. In 1909 a company of twenty-three Japanese plumage-hunters visited Laysan and Lysianski and destroyed

nearly 300,000 birds. They were arrested by the officers of the revenue cutter, brought back to Honolulu, tried and deported to Japan and the plumage was confiscated. Since this practical demonstration in bird protection the colony has not been disturbed.

Utilization of the Reservations

National refuges are utilized for several purposes other than the protection of birds, notably the preservation of other forms of wild life, the study of certain problems connected with the migration and life history of species, and the development of public sentiment in favor of wild life conservation. With the stopping of shooting on the Mosquito Inlet Reservation protection was afforded aquatic mammals, as well as birds, and since this order has been in effect manatees and porpoises have increased in the adjacent waters. Incidentally, it is interesting to note that Daytona at the upper end of the Mosquito Inlet Reservation is the most northern point at which the manatee occurs on the coast of Florida. On several of the Pacific Coast reservations sea lions are afforded protection and on some of the islands in the Hawaiian Reservation a rare and peculiar tropical seal is one of the most interesting species.

At the Deer Flat Reservation in Idaho experiments are being made to ascertain to what extent birds can be protected and encouraged to breed on a body of water which is used as a resort for visitors during summer. It is expected that with reasonable restrictions on the use of boats on the reservoir the birds will become as tame as they are at some of the winter resorts in Florida. At the Niobrara Reservation in Nebraska, which includes some 12,000 acres of land on the edge of the sand hills, within the former range of

the buffalo and the home of the prairie chicken and sharp-tailed grouse, an enclosure for big game has been constructed. Here has been established through the liberality of a public-spirited citizen of Nebraska a nucleus of a herd of buffalo, elk and deer, which in time will doubtless increase and stock a large part of the reservation.

At the Tortugas Reservation in extreme southern Florida some very interesting experiments are being conducted by Professor John B. Watson in coöperation with the Carnegie Institution. Professor Watson, who has acted as warden for several seasons, has been experimenting with the two species of terns which nest on the island to determine, if possible, the manner in which birds find their way during migration. He has also been studying some of the problems connected with the nesting habits of the birds. Several terns which were nesting on the island were marked for identification and sent northward on a steamer from Key West to New York. When off Cape Hatteras they were liberated and within a few days found their way back to their nests on the reservation. In order to show that this so-called "homing sense" was not fortuitous and not affected by the presence of the Gulf Stream, experiments will be made this season in taking the birds westward towards Galveston and setting them free at different points in the Gulf of Mexico some distance from the island. Professor Watson has also shown that the sooty tern is unable to pass the night on the water, indicating that although a sea bird it cannot venture far from land when on migration, whereas its neighbor, the noddy tern, apparently suffers no inconvenience when forced to rest on the water.

Many other questions in regard to food, time of nesting, period of incubation, methods of feeding, causes which check increase of the various species, and similar practical questions demand attention. These problems can best be solved where birds are nesting in large numbers and in working them out the reservations can be utilized as field laboratories for the increase of our knowledge as well as refuges for the birds.

SHELL CAMEOS

By L. P. Gratacap

Illustrations from the Morgan gem collection

THE ancients were not acquainted with the artistic possibilities in the pictorial gravure of shells. The permanence of mineral matrices for their skill was readily apparent and the stimulation supplied by the difficulties of the work enhanced both the appreciation and the pleasure of cutter and engraver. Then too the variegated and "layered" agates, with their strong tones gave opportunities for effective contrast, while intaglios permitted keenness of outline and microscopic precision.

But any implied censure must be qualified by recalling that the conches of the West Indies, which furnish the most adaptable material and the best color for the engraver, were unknown to the Greeks and Romans, and that the shores of the Mediterranean offered rather worthless material from which neither experiment nor accident could have evolved the priceless "brooch of our grandmothers."

Shell-cameo art apparently arose during the sixteenth century, expanding as demand increased. Ambitious subjects, drawn from the fables of mythology or the biblical records, were attempted; portraiture and conventional scenes also employed the numerous artists who now welcomed this new resource which permitted beautiful adjustments of marble-white relievos over saffron, yellow, orange or faintly mahogany backgrounds. The shell structure with its superficial white layer coherent with a delicate underlying colored film was a very convenient reproduction of the zoned onyxes. The material too was softer to work, although its fragility deterred hasty or careless sculptors.

The helmet shells (*Cassis cornuta, C. tuberosa, C. cameo* [*madagascariensis*], *C. rufa*) furnished the most promising and the more generally employed material, but enthusiasm and curiosity brought into use other shells as *Turbo, Strombus, Meleagrina, Cypræa* and even the *Nautilus.* In none of these species however was there so useful or so permanent a disposition of the parts for artistic effects and the background was either quite absent or less adaptable for desired effects, thus the process of elimination has reduced the first miscellaneous selections to the helmet shells alone and of these *Cassis cameo* claims preëminence because of the very favorable color development of the under conchiolin layer. The big stromb (*Strombus gigas*) by reason of its deeply-tinted, roseate mouth was quickly appropriated and its coloring produced vivacious effects, but the color faded and exposure soon robbed the design of its beauty.

The tiger cowrie (*Cypræa tigris*) perhaps might be made to rival the black helmet, but its convexity and smallness deprives the artist of a broad field

SHELL CAMEO OF THE MORGAN GEM COLLECTION

Carving of Guido Reni's Aurora on a Madagascar helmet shell (*Cassis cameo*). Morgan gem collection

for enlarged composition. In the Seba collection a cameo representing the "Rape of Europa," cut by C. Bellekin, was formed over the surface of the pearly nautilus whereon the broad band (keel of the shell) separating the side subjects "consisted of an arabesque of flowers and leaves, ending on the narrowing convex curve as it turns under into the cuplike lip of the shell, in a bold heraldic design, all of which was carved in relief." An example of the cowrie cameo may be seen in the Mediæval room of the British Museum showing a winged centaur galloping and armed with club and shield.

The helmet shell practically monopolized attention in the shell cameo industry however; and selection played an important part in the first steps. But a small number in any lot of shells are fit to use. Dullness, weakness, turbidity, a speckled condition of the under layer, imperfect solidity of the upper layer which may be too porous or even worm-eaten, disqualify a shell for the artist's acceptance. Sometimes the back-color layer is too thin and fragile to guarantee the integrity of the finished carving. In such cases, when the color is good, the artist cuts out his design on the shell intact, trusting to the arched rigidity of the shell to maintain its continuity.

The rich coloring of the inner zone in the helmets naturally attains its depth and desirable tone near the mouth of the shell and from this portion selections are made for the plate. Undulating ridges (as in *Cassis cameo*) on the last whorl are thickened, and into this strengthened deposit deeper lines can be cut and a high relief obtained. Yellow or orange backgrounds are unusual, but present very inspiriting contrasts.

The shell selected, the formal stages of executing the work begin. If a design as a *tour de force*, or too large for ornamental personal use is proposed, the shell frequently is treated as a whole. For most purposes, at least those connected with commerce, the shell is cut into pieces, by means of a tin wheel, running water and emery powder, a selection of the better-colored and textually perfect pieces made, and the various sections assigned to the subjects, as these subjects are best suited in size or treatment for the size or boldness of the physical features in the parts of the shell at hand.

In beginning his work, the artist prepares his surface much as the painter coats and smooths his canvas; discolorations, asperities of surface, minute imperfections are removed. The subject selected, the outline of the cameo — usually square, oval, or oblong with rounded angles — is shaped by means of a small grindstone turned over a trough of water, the process or action of grinding being safer than sawing, as the shell, freed from the reinforcement of its original position, may now easily split or scale. Next, the design itself is roughly outlined. Then a handle is attached to the shell by means of a cement made of tar, resin and brickdust, the precaution being observed that the back of the shell-pattern is covered by a piece of paper of its exact size, soaked in water, and the cement pressed around the edges

LARGE CAMEO ON HELMET SHELL

White relief on a lustrous brown background illustrating one of the numerous conceptions by Italian artists of the classic incident of Diana avenging the intrusion of Actæon. [The half-tone is made by joining three photographs taken from different sides of the curving shell.] Morgan gem collection

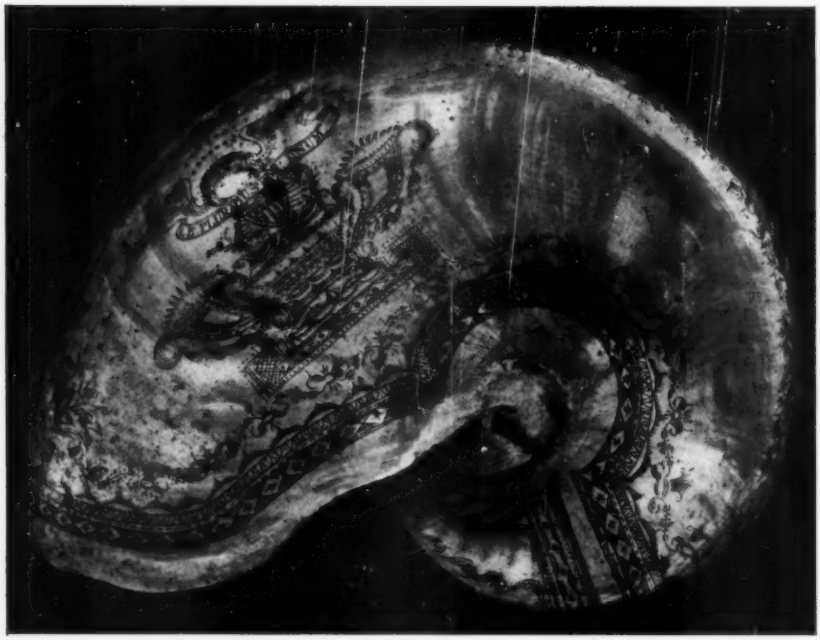
of the shell. This is a necessary precaution as it prevents the cracking of the shell, and the cement is supposed to adhere only to the under layer.

The cement cold, and the handle fixed in the wooden chancery of a notched board, cleaning the shell surface with pumice follows, and a more careful drawing on the white expanse in pencil. Ten implements may figure in the steps toward the finished product. These are steel gravers with sharpened, variously inclined and shaped ends of differing thickness and width, not remotely resembling the burin of the wood-engraver, and intended to be used as gauges, planes, scrapers and line points. These tools are sharpened on Turkey stone, moistened with olive oil. The cameo completed, the background is developed by rubbing it gently with the end of a square-sided stick of boxwood cut to a flat point and dipped first in crushed pumice stone and oil, then into a mixture of rotten stone and a few drops of sulphuric acid. This rubbing polishes and brightens the surface, evokes the deeper shades of color, and conveys to the cameo the contrast

As contrasted with the treatment of the Diana motive this carving of Phœbus in his chariot shows extreme elaboration of detail, a finely burnished surface and the last refinement of evenness in the relief

sought between the relief and its background. This final consummation must be closely watched and each burnished area immediately upon its completion wiped with a moist cotton spug to remove all trace of acid, which of course would corrode and dissolve the shell substance.

The three examples of this interesting *metier* in the Morgan gem collection show contrasted treatment. They are in the north end of the gem room, placed in an excellent light for their inspection. The subjects unfolded on them are the "Metamorphosis of Actæon" into a stag by the resentful Diana, whose swiftly directed arrow has already touched the unfortunate victim with its transforming charm, a copy of "Phœbus," the sun god, in his chariot and Guido Reni's "Aurora."



The pearly nautilus shell has been employed frequently as a surface for engravings and inscription of legends, prayers and emblems.

The most casual glance reveals two schools or methods of treatment, the bold, free romantic touch with its vivacity and acceleration of action in the first, and the classic calm and fastidious finish in the latter two. The collector and student of shell cameos is afforded here a very profitable material for study.

To-day shell cameos are perhaps lightly valued. They must have been wrought in great numbers for almost three centuries however, and in English, German and Scotch families domestic affection cherishes still the old brooches which a former day applauded as personal ornaments.

SOME CUBAN FOSSILS

A HOT SPRING YIELDS UP THE BONES OF ANIMALS THAT LIVED BEFORE THE ADVENT OF MAN

By Barnum Brown

With photographs by the Author

THE former connection of Cuba with the mainland of North, Central or South America has long been a subject of speculation, a one-time connection of the whole chain of West Indian islands with the continent being at once suggested by their position. But deep-sea soundings show that water ranging from one hundred to five hundred fathoms in depth separates Cuba from Florida while depths of more than one thousand fathoms separate it from Yucatan.

Cuba is at present rich in some phases of small life such as land shells, of which more than six hundred species have been described while less than half that number is known from the entire United States and comparatively few are common to the two countries. Of mammals however only three kinds

are represented, bats, rodents and insectivores, the latter two by a single species each. Covered as this island is with a luxuriant growth of subtropical vegetation, there are comparatively few exposures of the underlying rocks and those showing are of igneous or oceanic origin, in which land animal remains are not found.

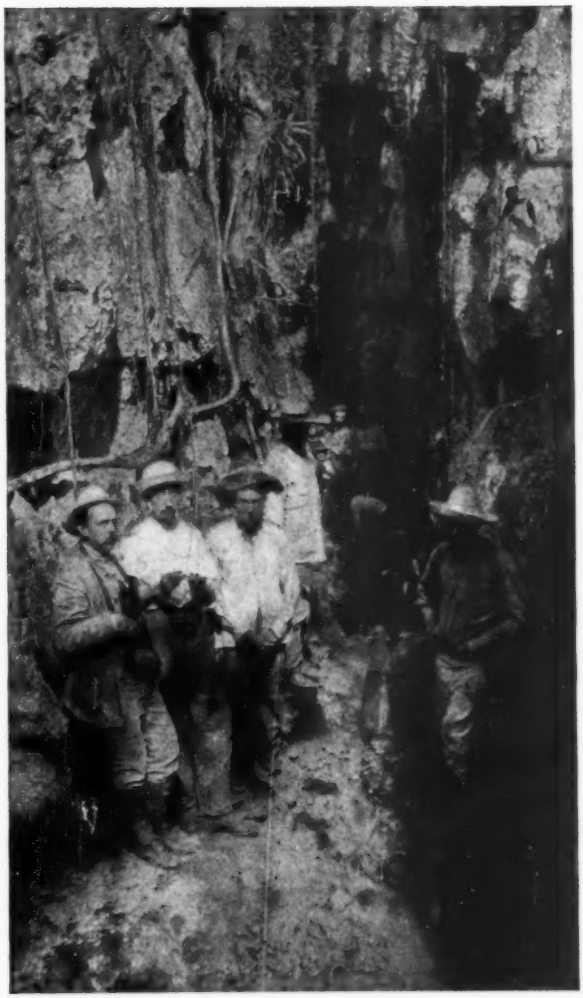
Entrance to the cave of Jatibonico. The black line above the entrance is not a crack but the covered passage of termites, a species of white ant which cannot stand strong light

Throughout Cuba, caves and fissures are of frequent occurrence, leached out of the limestone rocks by the chemical action of water

A comprehensive series of fossil animals, those forms that had lived there prior to the advent of man, would serve to determine the early history of this island. It was therefore of great interest when the discovery of a fossil sloth jaw was announced in 1860. In 1868 Dr. Joseph Leidy named this creature *Megalocnus rodens* and determined it to be related to the South American Pleistocene animal *Megatherium*. The authenticity of its origin in Cuba has been questioned however by some geologists until lately. Additional light was thrown on the former animal life of this island when that enthusiastic Cuban naturalist, Dr. Carlos de la Torre, presented a paper before the International Geological Congress in Stockholm in 1910 and exhibited many fossils collected by him in northern Cuba.

In response to a request from Dr. La Torre I went to Cuba in 1911 to aid him in further search for fossil remains. In company with Dr. La Torre and his assistant, Mr. Victor Rodriguez, I left Havana one morning in June destined for the little town of Caibarien on the north shore, to reach which we traveled a day through sugar plantations, groves of royal palms and rural scenes so interesting one is loath to dismiss them with the term picturesque.

From Caibarien to Yaguajay it was a short sail by motor boat along the coast in shoal water where one could wade most of the way and where the only navigable course is marked out by tree branches. Seaward were long lines of low-lying sandy keys, the feeding-ground of countless brilliant flamingos magnified by the mirage into regiments of giant British soldiery. Another short journey by narrow gauge road, more sugar plantations and palms and we had reached the high land bordering the Sierra de Jatibonico.



Fissure of Jatibonico during the work of excavation. Left to right, Dr. La Torre, Mr. Brown and the discoverer Señor Ramón González

It was in these mountain fastnesses that many Cuban patriots secreted their families, where they lived in limestone caves and fissures during the period of Weyler's concentration movement. One of these refugees, Ramón González, while dipping water from a fissure one day discovered a jawbone that he recognized was different from that of any creature now living in Cuba. It is of interest to recall here that besides the bats which are more or less migratory, but two other mammals are at present peculiar to the island — namely, the rare insectivore *Solenodon*, and the more abundant ratlike tree rodent *Capromys*. The latter is protected by common consent and now almost venerated by the country people because during the war these creatures stood between the refugees and starvation.

A drink on the trail. The *bejuco de parra*, resembling a grape vine, grows in forested regions. A section two inches in diameter and three feet long will furnish a drink of pure cool water

We went to the cave-fissure discovered by González and worked there, aided by many of the mountain people, who were greatly interested in the search and who gave us the hospitality of their homes — in return for national lottery tickets which they valued more highly than money. This fissure, evidently leached out of the limestone by the action of water, was about fifteen feet deep by three hundred feet in length and opened into a short cave. After cutting away the brush and orchids that partly filled the opening, we were soon at work turning over the mud. Bones showed here and there but were not plentiful. In a week we had completed this work and secured much material but nothing new to Dr. La Torre's collection.

I doubt not that this fissure was long ago, as it is to-day, a cistern to which the animals whose bones are preserved there came to drink. During the dry season one may go a long distance in parts of Cuba without finding water. [A fact that was taken advantage of by the Spanish soldiers, who poisoned the wells and water holes. Nature had provided for the patriots however, for all through the islands there is a vine in the forests that resembles the grape and is called *bejuco de parra* from which a section three feet long will yield a drink of pure cool water.]

After other localities nearby had been examined for fossils without notable results, we determined to visit Ciego Montero on the south coast whence came the type specimen of *Megalocnus*. The *Baños de Ciego Montero*, meaning the "bath of the blind field man," is about thirty miles northwest of Cienfuegos near a small river, the Analla. Here are three thermal springs close together having temperatures respectively of 93, 96 and 98 degrees fahrenheit. Around the one of 96 degrees, the best known thermal spring on the island, a hotel with swimming pools has been built. The spring of 98

degrees is known as the "Chapapote" and in this one the jawbone of *Megalocnus* was said to have been discovered. This pool was surrounded by rushes and tall grass with an old dilapidated bathhouse on one side, as we found it, and from it flowed a rivulet in which there were many small fish. In subsequent work I collected here six species of fish that had become acclimated to the hot water, one individual having a length of six inches.

As the center of this pool was seven feet deep, we engaged a field hand to dive to the bottom. Tense and expectant were we three as Avalino dived time and again bringing up handfuls of black mud, finally a crocodile vertebra and after a few more efforts a mammal rib and some turtle fragments. These pieces showed that bones were numerous, so a large hand pump was secured from a nearby plantation. By pumping in relays we could in four hours exhaust the pool and keep the water down. Bones stuck

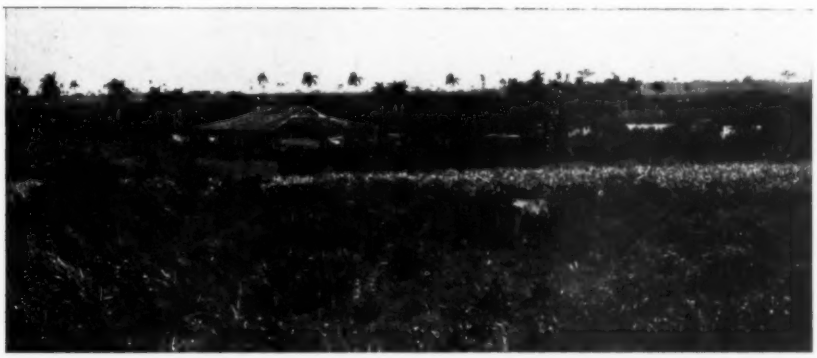
Royal palms near Aguacate. These are symbolic of Cuba; like regiments of grenadiers they outline the plantations in long lines that fade away in perspective

Trinidad and Lookout Hill

Casa de Miñoz, the house where Baron Humboldt dwelt in 1800 during his work in Trinidad

Casa de Suarez, the home of our mountain host. Country homes are made entirely from the royal palm; the trunk makes the walls of the house, the leaves make the thatched roof and the bracts cover the ridge pole. Stoves are uncommon, food is cooked over an open fire or on an earth-covered table

up all through the black mud in great profusion, jaws and bones of sloths, skulls of crocodiles and alligators, and parts of turtle shells. There were also numerous pine cones although at present pine trees are not found in the province of Santa Clara. In three days we had secured several boxes of bones but in so doing freed the partly choked opening until the water could no longer be kept out so that we could work, even with relays pumping night and day. A small hand fire-pump was then secured but the combined



Baños de Ciego Montero and railroad bridge crossing Analla River

pumps did not suffice. Finally a three-inch centrifugal gasolene pump solved the problem although it required constant pumping to keep the water out.

In three weeks' time we had taken out all material immediately surrounding the vent where the water boiled up out of a crack in the basaltic bed rock. Many bones were broken and showed the tooth marks of alli-

Baños de Ciego Montero, hotel in background and Chapapote spring in foreground. This spring of 98° fahrenheit was filled with living fishes and insects. In the muddy bottom there were hundreds of prehistoric fossil bones

Sanchez and Avalino at the pump. A stream of water six inches wide and an inch through flows from this spring constantly

gators, and few bones of any single individual were associated. One night a heavy rainstorm caused the Analla to overflow a part of the stream crossing the spring. Next morning there were shells and river turtles in the spring, an example of the way bones probably accumulated in prehistoric times.

The bones represent at least two genera and five species of sloth, the largest about the size of a black bear, a rodent, a peccary, birds, an alligator, a crocodile and three species of turtle. The fossils are of Pleistocene age and none are turned to stone. Some recent bones are mixed with them. The collection has not yet been prepared and studied, so that at present it would be premature to say what may be the final deductions. The sloths particularly are creatures of South American origin, but whether they reached the island by way of a land bridge or in some other way has not yet been determined.

The centrifugal pump in action. The canvas covers the center of the spring. It was impossible to work in the combined heat of the midday sun and hot water without shelter

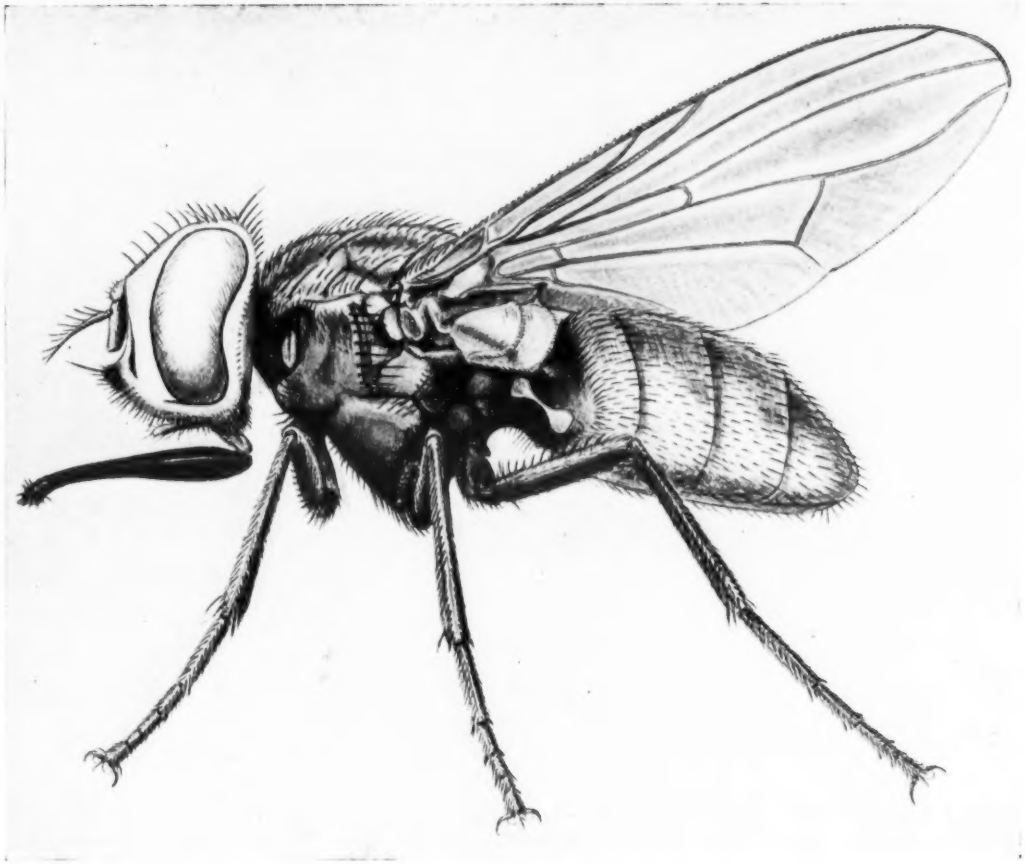
AN INSECT-BORNE DISEASE — INFANT PARALYSIS

By C-E. A. Winslow

NO branch of public health science has been more dramatic than the progressive conquest of the insect-borne diseases. Up to 1898 malaria was a "bad air" disease, a mysterious miasm that crept out at night from the swamps to seize on its helpless victims. Then the Englishman, Ross, and the Italian observers, Grassi and Bignami, solved the problem and the mystery resolved itself into a question of controlling mosquito-breeding pools. When the American army of occupation went into Cuba in 1898 yellow fever was raging. It had killed on the average seven hundred and fifty men and women in the city of Havana every year. Our administrators were at first helpless. The ordinary methods of sanitation served to control typhoid fever and smallpox and other diseases whose causes were known. Yellow fever decreased from the high figures of 1898 when the Havana hospitals were filled with soldier victims, but in 1900 it began to rise again. Then in March 1901, the American Army surgeons, Reed, Carroll and Agramonte, heroes and martyrs of the war against disease (for two of the three gave their lives to the cause) announced the discovery that yellow fever too was carried by a mosquito of the genus *Stegomyia*. With this basis for action the conquest of the disease was almost immediate. For 1901 there were eighteen deaths from yellow fever in Havana and for 1902 and succeeding years, none. A few cases later occurred in a little epidemic around the wharves in which the infection was introduced from outside but the endemic scourge of the city for centuries had been stamped out in a single year. So the discovery of each new disease germ and each new insect host has substituted effective measures of control for helplessness and fear.

The latest of the insect-borne diseases to yield up its secret is infant paralysis or poliomyelitis. This infection, mild and obscure in its onset, but not infrequently fatal and usually leaving its victims more or less permanently crippled, was entirely a mystery until four years ago. It is not a new disease. In the light of modern knowledge it is clear that various historical personages have suffered from it. In 1905 however, it assumed a violent epidemic form in Sweden and quickly spread to this country, appearing first in 1907 in the eastern coast cities and in 1908 in the Scandinavian states of the Northwest. In connection with this disease I received a vivid lesson in the helplessness that characterizes the prescientific period of disease. It was in a little summer colony on the Massachusetts coast, a colony of about twenty houses stretched out along a road through the salt marshes. First a mild case occurred, not recognized at the time but since thought to be infant paralysis. Then in rapid succession two

THE INSECT THAT TRANSMITS INFANT PARALYSIS



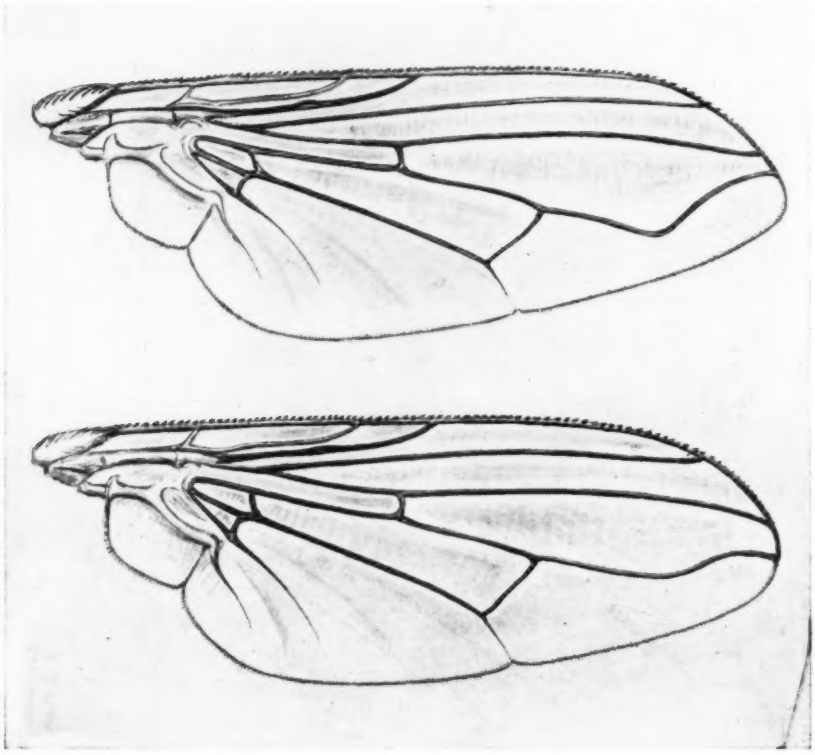
Original drawing of the biting stable fly (*Stomoxys calcitrans* Linn.) by Mr. Ignaz Matausch of the Museum's preparation department. This fly closely resembles the house fly and may easily be mistaken for it. Compare with figure on page 233

children in one family were taken with it and died. There were children in almost every house and the parents felt the gravest alarm. Many were physicians accustomed to control disease and not to fear it. Here was an unknown force however which no one could control. Was this disease carried by people or air or domestic animals or insects or food supplies? No one knew. Finally a fourth case occurred, further along the road; and the next morning every family in the little colony had gone. There was no rational mode of fighting this "pestilence that walketh in darkness," no recourse but flight before it. This was the attitude of mankind toward every epidemic disease before Jenner and Pasteur.

The first steps were taken in clearing up the mystery of infant paralysis when in 1908 Landsteiner and Popper in Vienna succeeded in transmitting the disease to monkeys. Flexner and Lewis at the Rockefeller Institute in the next year extended this work and proved by successive inoculation experiments that there was a living germ present in the body and in the nose and throat of affected persons although this germ belongs to the class of the "filterable viruses," organisms so minute that they will pass through the pores of a Berkefeld filter and cannot usually be distinguished under the most powerful microscopes. Very recently during the past winter, Flexner and Noguchi have added new laurels to the Rockefeller Institute and to New York by cultivating this almost invisible germ outside the body. Animal experimentation however, which has been the chief agent in bringing communicable disease under control, made it possible much earlier to detect the presence of the germ by its effects. Flexner and Clark at the Rockefeller Institute, Kling, Wernstedt and Peterrsen at Stockholm, Osgood in Boston, and others showed that the germ may persist in the nose and throat after recovery and that it may be found in the nose and throat of healthy persons who are therefore liable to act as carriers of infection, although themselves not sick. It seemed probable that at least one method of spread of infant paralysis was by more or less direct contact between susceptible persons (particularly children) and either previous cases or healthy carriers.

There were two things however which seemed puzzling and which could not easily be harmonized with this theory of spread by human contact. In the first place infant paralysis is preëminently a summer disease. Cases do occur at all seasons but the great majority develop during the warm weather. Now this is a characteristic of insect-borne diseases like malaria and yellow fever since the breeding of the insect hosts is directly dependent upon temperature. On the other hand, diseases which spread by contact usually reach their maximum in winter when people are crowded together and there is most opportunity for the interchange of germs. There are exceptions to this rule, like typhoid fever, which is normally a summer disease though in the northern United States it is not generally carried by

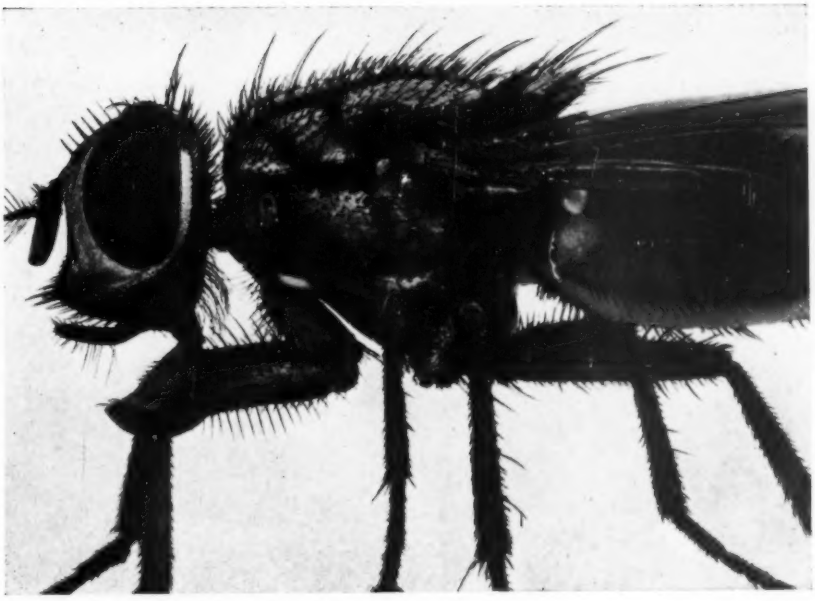
insects; so the seasonal prevalence proves nothing by itself. Another curious fact brought out in the Massachusetts studies by Richardson however was the greater proportionate incidence of infant paralysis in rural than in urban districts. Again the rule is not a universal one, but the fact that even in one state a distinctly higher percentage of cases occurred in the country than in the city was a striking one. Diseases that spread directly from person to person are almost always most prevalent where persons



Wing of the house fly (*Musca domestica*) above and of the stable fly (*Stomoxys calcitrans*) below. Note the sharp elbow in the third long wing vein of *Musca* and the less bent vein of *Stomoxys*. Drawing by Ignaz Matausch

congregate so that the opportunities for contagion are most frequent; while insect-borne diseases are often most serious in the country where insect breeding places are more frequent.

These facts led the Massachusetts investigators to search with special care for a connection between some insect host and the prevalence of infant paralysis, and in 1910 Dr. P. A. E. Sheppard, working for the state health department, noted the large number of cases in which fly bites were reported



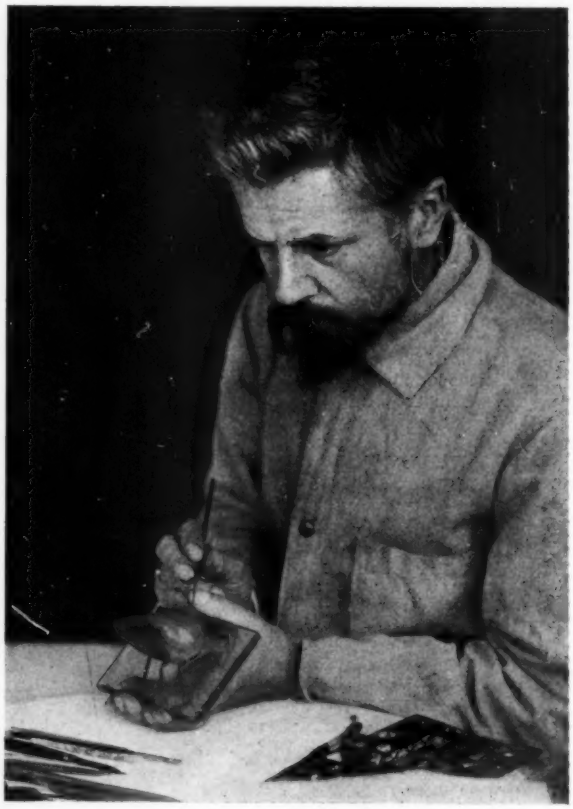
Side view of house fly from enlarged model made by Mr. Ignaz Matausch. The house fly has not the long biting proboscis characteristic of the stable fly which transmits infantile paralysis. Compare with figure on page 230

by the victims of the disease. In the next year Mr. C. T. Brues, an entomologist, was assigned to work with Dr. Sheppard and suspicion began to point strongly toward a particular insect, the biting stable fly. Finally in the summer of 1912 Prof. M. J. Rosenau of the Harvard Medical School completed the chain of proof. No one who was present at the joint session of Sections I and V of the Fifteenth International Congress of Hygiene and Demography on September 26th last will forget that most striking event of the whole Congress, the presentation of these results. Eminent investigators from Norway, Sweden and Austria, as well as some of the leading workers in this country, had presented the formal papers of the morning. Much that was important was added but the weight of evidence still seemed to point, though somewhat doubtfully, toward human contact as the chief agent in the transmission of the disease. In the discussion that followed, Dr. Rosenau made a preliminary report of his experiments and announced that he had succeeded in producing poliomyelitis in six out of twelve monkeys bitten by stable flies (*Stomoxys calcitrans*) which had been allowed to feed on other monkeys suffering from the disease. As a result of his discovery the entire outlook for the control of infant paralysis has been changed.

Prof. Rosenau's work has since been confirmed by Drs. Anderson and Frost of the United States Public Health Service. There is of course no certainty that the disease is always transmitted by *Stomoxys*. The work of Dr. Flexner and of the Swedish observers and the occurrence of a certain proportion of cases in cold weather strongly suggest that sometimes

infant paralysis may spread by direct contact between human beings or in other ways than by fly bites. On the other hand it seems certain that the biting stable fly is one means by which this disease is conveyed; and the seasonal and geographical prevalence of the epidemics makes it seem probable that this is the usual and most important means.

The *Stomoxys calcitrans* like the house fly or filth fly (*Musca domestica*) is a two-winged fly of the family Muscidæ. It closely resembles the house fly in general form and size and may easily be mistaken for it by the casual observer. It differs from the house fly in one very important respect however, in the possession of a sharp biting proboscis instead of the soft tongue-like mouth parts with which the house fly absorbs its food. This proboscis of the *Stomoxys* may be seen projecting forward as a fine black beak when the insect is at rest. Another important difference lies in the venation of the wings, the third of the long veins being bent at a less sharp angle in the *Stomoxys* than in the house fly. Two additional points of difference between the house fly and the stable fly are brought out in Mr. Matausch's original drawing reproduced herewith: that the posterior edge of the compound eye as seen in side view is concave in *Stomoxys calcitrans* and practically straight in *Musca domestica*; and the antennæ of *Stomoxys calcitrans* are clothed with hairs on the upper side only while those of *Musca domestica* have hairs both above and below.



Mr. Ignaz Matausch, preparator, who has recently completed a marvelous piece of technical work in the shape of an enlarged model of the common house fly. It represents a magnification of 64,000 diameters, required one year for its construction and is the most accurate representation of this insect in existence

The habits of *Stomoxys* differ widely from those of *Musca domestica*. The *Stomoxys* is a biting fly, feeding on the blood of the higher vertebrates. It is found in the vicinity of dwellings, particularly where horses and cattle are kept, but it is apt to remain out doors in warm sunny places and does not come into the house much except at night and before rain. According to Brues it breeds in "fermenting heaps of grass, straw and similar substances, horse manure, cow dung and even garbage" and its preference is probably in "about the order named." Many devices used for trapping the house fly and depending on its liking for sweets will of course prove of no avail with the stable fly. For the control of this insect, dependence must probably be placed chiefly upon elimination of its breeding places. There can be no doubt that the recognition of the importance of this insect in the transmission of infant paralysis, which we owe to such a striking coöperation between epidemiologists, entomologists and experimental physiologists, opens a new chapter in our campaign against this disease; and the summer of 1913 should throw a flood of light upon the subject.

STORAGE OF MAMMAL SKINS

By Roy C. Andrews

THE care of large mammal skins is one of the problems which every museum has to meet. The two things most to be desired are safety and accessibility and in order to secure either it is sometimes difficult not to sacrifice the other. The skins when they have been received from the field are first tanned after which they can be easily folded, but even then are of great bulk and in some cases of considerable weight.

The problem of their storage has been met by different institutions in various ways. One museum stores the skins in large cans eight or ten feet long by four or five feet in height and as much in depth, where the specimens can be spread out almost at their full length. This method has its advantage but the very serious difficulty of requiring an almost unlimited amount of space. The cans are however movable which is a point in its favor.

Another American institution is contemplating the installation of a cold storage room in which the skins will be hung from racks which can easily be pulled out and examined and where the temperature is sufficiently low to prevent the breeding of *Dermestes*, the pest of all natural history collections.

The American Museum of Natural History has met the problem in a still different way. In two large rooms storage cases have been built solidly into the wall. The backs and sides are of cement, the doors of iron and the trays of woven iron wire. The cabinets are about six feet high, above them a latticed iron floor has been built and a duplicate row of cases installed thus giving a second-floor room and double space, all of which is readily

accessible. Nothing has been used in the preparation of the rooms other than iron and cement so that in case of fire if the doors were closed the cases would be practically safe. The trays on which the skins are placed slide easily upon angle-iron ratchets and a whole tray or a single skin can be re-

Fireproof storage cases built solidly into the wall. Backs and sides are of cement, doors of iron, trays of woven iron wire. An open can of carbon disulphide protects from insects

moved without the slightest difficulty. An open can of carbon disulphide placed on one of the shelves at the top of the case will allow the gas to penetrate into all skins and is a sufficient protection from insects.

Skins of the beautiful Peary caribou, showing every variation of age, sex and pelage. The storage cases of the American Museum preserve such material while making it always accessible for study

Each cabinet bears a label on the door outside giving the species and the number of each skin contained in the compartment. Thus it is possible to tell not only the storage case but the actual tray on which the specimen desired has been placed. A long iron table in the center of the room is convenient for the examination of skins and for study of such specimens as it is not desirable to remove from the storage rooms.

Of some species of large mammals the Museum contains an extensive and important series. For instance the beautiful Peary caribou are represented in the collection by about one hundred and twenty-five specimens showing every variation of age, sex and pelage. These are the only skins of this species in any museum of the world and in themselves present an extremely interesting and valuable collection. The musk oxen also, are represented by an almost equal number of specimens.

While many of these skins will be exchanged in the future for other museum material, nevertheless in the meantime they must be carefully preserved and be accessible for study; to this end the storage cases are proving eminently successful.

MUSEUM NOTES

SINCE the last issue of the JOURNAL the following persons have been elected to membership in the Museum:

Life Members, MRS. MARY A. TUTTLE, MISS GRACE SCOVILLE and MR. ARNOLD SCHLAET;

Annual Members, MRS. WILLIAM G. ROCKEFELLER, MRS. STANFORD WHITE and MESSRS. SIEGMUND ADLER, T. BROOM BELFIELD, FREDERICK BLASCHKE, HOWARD CHANDLER CHRISTY, JOSEPH C. HAND, AUGUSTUS F. KING, ALEXANDER KONTA, HENRY S. LAKE, H. G. RAMSPERGER and LLOYD W. SEAMAN.

THE Couper bust of Professor Albert S. Bickmore [See frontispiece] has recently been placed at the entrance to the Museum auditorium, an especially appropriate location since Professor Bickmore was so intimately associated with the organization and development of the lecture system at the Museum. From 1886 to 1903 at a time when he was a leader in the work of the Museum, he was also identified with the State Department of Public Instruction. He was one of the pioneers in lantern-slide work, being probably the first educator to exhibit slides of such accuracy and beauty. He kept photographers traveling in different parts of the world collecting photographs and he bought the best negatives that were brought back by Museum and other explorers. From such negatives he made up a series of lectures for the teachers in the public schools. When the contract between the Museum and the State terminated, all of the slides and of the original negatives from which the slides had been made went to Albany, Professor Bickmore's personal set of slides alone remaining at the Museum. The great value attaching to this latter set, recently presented to the Museum by Professor and Mrs. Bickmore, was realized when the Albany fire destroyed the original negatives and slides. It is this set of 12,000 beautifully colored slides that has made it possible for the Museum to carry on its effective lecture work for school children. During the spring more than twenty lectures were given in the regular course and these were attended by nearly 19,000 pupils. In addition the slides have been in great demand by teachers for special lectures given at the Museum by members of the Museum staff or by the teachers themselves.

THE CROCKER LAND EXPEDITION is to be congratulated on the appointment as surgeon of Dr. Harrison J. Hunt of Bangor, Maine, Bowdoin College, A. B., 1902 and M. D. 1905.

A Review of the Primates by Daniel Giraud Elliot has recently been published by the Museum. This is a monographic treatise in three quarto volumes containing 1360 pages, 28 colored plates and 512 half-tone figures. Although the apes, monkeys and lemurs surpass all other mammals in scientific interest, it is a striking fact that no satisfactory review of all the known living species has hitherto been published. Dr. Elliot's work treats not only of the generic and specific characters, synonymy, literature and other technical matters, but also very fully of habits. The living animals are shown in twenty-five plates and twenty-eight colored plates, the latter mostly reproductions in four colors from the original lithographic figures published in the *Proceedings of the Zoölogical Society of London*; and photographs of the skulls of more than one hundred species are reproduced with a clearness to allow technical comparisons. *A Review of the Primates* is interesting also as an example of beautiful book-making. The edition is limited to 850 copies, 500 being offered for sale.

BY arrangement with the Ottawa Museum, Dr. Rudolph M. Anderson of the Canadian Arctic Expedition will bring back a set of duplicate specimens to fill the gaps still existing in the mammal and bird collections of the American Museum.

DR. J. A. ALLEN has been working at the British Museum during the past six weeks on the mammals of Korea and South America. His work is particularly complete on South American squirrels, the material which Mr. Chapman's expedition secured in Colombia and the large unidentified collections of the British Museum providing for an entire revision of the group. The work on the Korean mammals collected by Mr. Andrews in northern Korea had the benefit of comparison with British Museum specimens secured by the Duke of Bedford's earlier expedition to Korea, the British Museum being practically the only institution in the world which contains any series of mammals from the region.

DR. ARTHUR B. EMMONS of Harvard University, has published an article in *Biometrika* on "The Variations in the Female Pelvis, based on observations made on 217 specimens of the American Indian Squaw." This study is founded largely upon skeleton material in the American Museum. The results were so important that the author was awarded the Boylston Medical Prize for 1912.

THE Museum's zoölogical expedition to Colombia returned early in May, after an absence of four months. The objects of the expedition were first, to collect material for a habitat group illustrating the bird life of the Magdalena Valley; second, to complete the ornithological survey of the Colombian Andes, begun in 1910; third, to ascertain definitely the limits of the so-called Bogotá region whence, for the past seventy odd years specimens collected by natives, but unaccompanied by data of any kind have been received; fourth, to collect a series of topotypical specimens from the Bogotá region. The expedition included Mr. Frank M. Chapman, and Messrs. George K. Cherrie, first assistant, Louis Agassiz Fuertes, artist, Thomas Ring, Paul G. Howes, and Geoffrey O'Connell, volunteer assistants. This party left Barranquilla on January 19, and during the voyage of twelve days up the Magdalena River to Honda, by taking advantage of every opportunity when the boat stopped for cargo or fuel, collected three hundred birds. Studies for the habitat group were made at El Consuelo, on the western slope of the Eastern Andes, 2700 feet above Honda; from this point a superb view is had of the Magdalena Valley, through which the river winds picturesquely, while in the background the Central Cordillera rises crowned by the three great snow peaks, Tolima, Isabel, and Ruiz, each of which has an approximate altitude of 18,000 feet.

Having completed its work in this region, the expedition journeyed by mule to Bogotá, making this city its headquarters during the remainder of its stay in Colombia. From Bogotá it passed first to the eastward to Villivicencio, at the eastern base of the Andes, stopping *en route* at all favorable localities. On reaching Villivicencio, the section through the Andes from the Pacific coast to the upper drainage of the Orinoco, was completed, and data are now in hand for the determination of the altitudinal life zones of the Colombian Andes. A month later the expedition returned to Bogotá and passed southward to Fusugasuga, encountering there entirely different species from those which it had met with in its journey to the eastward. In all, some 2300 birds and about 100 mammals were secured, and the diversity and richness of the avifauna is illustrated by the fact that no less than 505 species of birds were secured during the comparatively brief period when the expedition was actually in the field.

DR. P. E. GODDARD is preparing for a trip to the upper Peace River country of northwestern Canada to make a study of the Beaver Indians, a little known tribe of the Northwest; and Dr. Herbert J. Spinden will spend the summer in New Mexico on ethnological work among the Pueblo Indians of the Rio Grande Valley.

THE department of mammalogy has begun the revision of its osteological collections with reidentification and card-indexing, and also the work of restorage of these collections in the new storage room where they will be for the first time in wholly accessible shape for study.

MR. VILHJÁLMUR STEFÁNSSON returned to the Museum about the first of May after two months in Europe chiefly in Rome where he delivered a paper at the International Geographic Congress, and in London where he assembled oceanographic and other scientific apparatus. The Stefánsson Expedition, as now planned, will consist of a scientific staff of fourteen men divided into two parties: one sailing north from Herschel Island in the "Karluk," a 247-ton whaling vessel, and the second east in a twenty-ton vessel fitted for cruising in small rocky waters.

The northern party under Mr. Stefánsson's leadership, with a captain and crew of fifteen men, will be made up of six scientists, among whom will be Mr. W. T. McKinlay of the University of Glasgow, in charge of terrestrial magnetism; Mr. George Malloch, member of the Canadian Geological Survey, geologist and specialist in strateography; and Mr. James Murray of Glasgow, oceanographer for many years and co-worker of Sir John Murray, member of the Sir Ernest Shackleton Antarctic Expedition, and recently of the Colombian boundary survey of South America.

The southern party under Dr. Rudolph M. Anderson, zoölogist and second in command, will have a personnel of eight men among whom the following are of note: Fritz Johansen, biologist in the Department of Agriculture, Washington, with a record as member of the Mylius-Erichsen East Greenland Expedition; Henri Beuchat, French anthropologist and author; Dr. D. Jennes of Oxford, ethnologist with field experience in the South Sea Islands; Dr. A. Forbes Mackay of the University of Edinburgh, experienced as a British naval surgeon and as surgeon of the Shackleton Antarctic Expedition; and Mr. J. J. O'Neil of the Canadian Geological Survey, mining geologist and specialist in copper deposits.

The plan of the northern party includes three or four years' investigation of the unexplored area north of western Canada and Alaska, to the end of securing comprehensive scientific data covering the region. It will use new land discovered, as a base of supplies or will push east and establish a base on Prince Patrick Island. From such base, exploration will move northward, in summer by boat and in winter by sledge. The southern party with secondary base on Victoria Island will give special study to those Eskimo tribes showing an admixture of European blood, discovered by Mr. Stefánsson on his previous expedition under the auspices of the American Museum; as well as to the copper deposits also discovered and other matters of scientific and economic interest. Because of the very liberal support of the Canadian Government the expedition has been able to broaden both its geographic aims and the scope of its scientific research from the original plans. Mr. Stefánsson will remain at the Museum until the last of May and the expedition will sail from Victoria sometime in June.

DR. C-E. A. WINSLOW has been appointed chairman of a commission which is to spend $50,000 in the experimental study of ventilation problems during the next four years. The other members of the commission are: Prof. F. S. Lee of the College of Physicians and Surgeons, Prof. E. L. Thorndike of Columbia University, Prof. E. B. Phelps of the Massachusetts Institute of Technology, Dr. James Alexander Miller and Mr. D. D. Kimball. The fund is part of the gift made by Mrs. Elizabeth Milbank Anderson to the Association for Improving the Condition of the Poor.

MR. ALANSON SKINNER, assistant curator in the department of anthropology, is making collections for the Museum among the Western Ojibway Indians of Long Plains, Manitoba.

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